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Original Article

A study on opportunistic parasitic & fungal infections in HIV patients in rural Hospital at sangareddy, Andhra Pradesh.

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ABSTRACT

India has the world's second largest burden of HIV-infected persons. People with advanced stages of HIV infection are vulnerable to secondary infections and malignancies that are generally termed as opportunistic infections. A hospital based descriptive study was conducted at MNR Hospital in the department of microbiology, MNR rural medical college sangareddy dist AP. To know the prevalence of HIV/AIDS infection among the patients attending in MNR hospital. And to diagnosis opportunistic infection associated with HIV/AIDS patients. A total of 3103 patients were screened for HIV and 71 were found HIV positive and among HIV Positive patients 30 had opportunistic infections. Diagnosis was done by three rapid HIV test kits based on different principles as recommended by NACO. Out of 71 HIV positive screened, 44 (61.97%) were male. 84.5% (60) were belonging to 21-40 years of age which is the sexually active and economically productive age group. Clinically they presented with more than one symptom, like fever 97.18% (69), loss of weight 74.64% (53), loss of appetite 61.19% (44), fatigue and malaise 45.07% (32) and diarrhea 40.84% (29) cases. the most common opportunistic infections, was 43.33% (13) candida followed by 36.67% (11) cryptosporidium parvum, 13.33% (4) Entameoba histolytic, 3.33% (1) Strongyloides stercoralis and 3.33% (1) Isospora belli respectively. To conclude our study confirms the findings that HIV seropositive individuals are prone to infections with enteric protozoan parasites belonging to both opportunistic and non opportunistic pathogens. Hence it is necessary that HIV/AIDS patients diagnostic methods.

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1. Introduction

Human immunodeficiency virus (HIV) is one of the greatest challenges facing mankind. People with advanced stages of HIV infection are vulnerable to secondary infections and malignancies that are generally termed as opportunistic infections. This is because they take the advantage of the opportunity offered by a weakened immune system. Opportunistic infections are common complications of HIV infection and other AIDS (Acquired Immune Deficiency Syndromes) defining conditions that rarely cause harm in healthy individuals (Avert Org. 2005a).¹

The HIV/AIDS epidemic has reached an important threshold in India. India has the world's second largest burden of HIV-infected persons. One of every six new HIV/AIDS infections occurs in India. Two Indians become HIV-infected every minute. The National AIDS Control Organization (NACO) has estimated that 2.5 million people were living with HIV/AIDS, present in all states.²

In immunocompromised patients, the intestinal opportunistic parasites probably play a major role in causing chronic diarrhoea accompanied by weight loss.³ The incidence and prevalence of infection with a particular enteric parasite in HIV/AIDS patients is likely to depend upon the endemicity of that particular parasite in the community. *C. parvum*, *I. belli* and *E. histolytica* have been reported as the most frequently identified organisms apart from candida infections in HIV infected individuals with diarrhoea from India and other parts of the world^{4,5}.

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AIMS AND OBJECTIVES

1. To study the prevalence of HIV/AIDS infection in patients attending in MNR hospital.
2. To diagnosis opportunistic infection associated with HIV/AIDS patients.

2. Materials and Methods:

A hospital based descriptive study was conducted at MNR Hospital in the department of microbiology, MNR rural medical college sangareddy dist AP. during the period of one year i.e. from 1st of July 2008 to 31st of June 2009. A convenience sampling technique was used to determine the magnitude of opportunistic and other intestinal parasite in among HIV/AIDS HIV positive healthy carriers and HIV negative individuals attending organization. A total of 3103 patients were screened for HIV and 71 were found HIV positive and among HIV Positive patients 30 had opportunistic infections. Diagnosis was done by three rapid HIV test kits based on different principles as recommended by NACO.

Sample collection and processing

HIV serology

The presence of HIV-1 & 2 antibodies in the serum was determined using rapid HIV-1 & 2 diagnostic test kits following the manufacturers instructions. The results was then interpreted by following the current national algorithm for screening of sera for HIV-1 & 2 infections that was adopted from WHO. In brief, the sera was first tested to Determine HIV-1/2. If the result was found to be positive it was taken as positive. If not, it was further tested with other diagnostic methods. Presence of HIV antibodies in serum was determined by an enzyme linked immunosorbent assay (EIA)⁶.

Stool examination

Subjects were provided a labeled leak proof container, toilet paper, applicator stick and informed to put about 1-2 gm stool using applicator stick. Then stool specimens were examined by direct saline, iodine wet mount preparation and formal ether sedimentation methods following the standard procedure. Oocyst concentration and modified Ziehl Neelsen (Zn) staining techniques were used for the detection of Oocyst of *Cryptosporidium parvum* and *Isospora belli* following the standard procedure.⁷ Two smears were prepared from each sample and one examined by experienced senior medical laboratory technician and the other by the principal investigator independently.

First, direct smears or wet films are made by mixing a small quantity of stool with a drops of saline or iodine and then examine it first under low power (10x) and then under high power (40x) of the microscope.

For Fungal Infections

Using sterile thin cotton swabs, specimen from both the infections was taken with aseptically. In case of oral candidiasis, specimen was collected from the oral cavity with two sterile cotton swabs. One swab was used for direct smear for Gram stain, Second swab was used for inoculation on SDA with out antibiotics and incubated at 25°C. A smear was made from the culture and examined with 10% KOH for demonstration of Candida species.

Fungal growth was placed onto a clean glass slide. A drop of Lacto Phenol Cotton Blue was put on the slide and teased with teasing needles. A cover slip was placed and examined under 10x and 40x objectives. If the colonies on SDA are creamy white and smooth, smear examination show spherical budding cells and pseudohyphae. Presence of pseudohyphae shows colonization and tissue invasion.⁸

3. Results:

In the present study, the prevalence of HIV Positive cases was 71 (2.3%) out of a total number of 3103 cases were screened for HIV testing at rural MNR Medical College and Hospital. Out of 71 HIV positive screened, 44 (61.97%) were male and 27 (38.02%) were females. Age wise distribution reveled that 32.4% (23) cases were from the age group of 31-40 years and 52.1% (37) were belonging to 21-30 years, 15.5% (11/71) cases were from the age group of 41-50 years thus 84.5% (60) were belonging to 21-40 years of age which is the sexually active and economically productive age group. Most of the patients were belonging to 80.28% (57) lower socioeconomic status, and 36.61% (26) staying away from family. Heterosexual route of transmission was the commonest 18.31% (13) mode of spread. Clinically they presented with more than one symptom, the common being fever 97.18% (69), loss of weight 74.64% (53), loss of appetite 61.19% (44), fatigue and malaise 45.07% (32) and diarrhea 40.84% (29) cases.

Out of 71 HIV positive cases 42.25% (30) had opportunistic infections. Table 1 indicates that most common opportunistic infections, was 43.33% (13) candida followed by 36.67% (11) cryptosporidium parvum, 13.33% (4) Entameoba histolytic, 3.33% (1) Strongyloides stercoralis and 3.33% (1) Isospora belli respectively.

TABLE 1 Sex Wise Distribution Of HIV Positive Patients With Opportunistic Infections.

Type of infection	Male		Female		Total	
	No	%	No	%	No	%
Candida infection	04	22.2	09	75.0	13	43.3
Cryptosporidium parvum	09	50.0	02	16.7	11	36.7
E. histolytica	03	16.6	01	8.3	4	13.4
S. stercoralis	01	5.6	00	0.0	1	3.3
Isospora belli	01	5.6	00	0.0	1	3.3
Total	18	100	12	100	30	100

4. Discussion:

The origin of HIV and AIDS has puzzled scientists ever since the illness first came to light in the early 1980s. For every 25 years it has been the subject of fierce debate and the cause countless arguments. As the largest lymphoid organ in the body the gastrointestinal tracts is a potential reservoir for human immunodeficiency virus (HIV), the causative agent of acquired

immunodeficiency syndrome (AIDS), and it is important site for HIV induced immunodeficiency.⁹ The resulting defects in cellular and humeral defense mechanism predispose the gastrointestinal tract to a spectrum of viral, fungal, bacterial and parasitic pathogens.¹⁰ as it is indicated in the current study Candidiasis was the most common 43.33% opportunistic infection and our finding is similar to the report of NACO¹¹, and A Singh et al⁹. But Kaur et al¹², and Ayyagari et al¹³, have reported candidiasis as the second most common infection in AIDS patients

In our study *Cryptosporidium parvum* infection was observed in 36.67% cases. Our finding was higher in comparison to the study conducted in Jimma¹⁴ and Addis Ababa¹⁵ where both reported 17%. Joshi M. et al.¹⁶ reported 14.9% of cases of *Entamoeba histolytica* infection in his study was analogous to our observations i.e. 13.3%. The present study indicated 3.33% of cases of both *strongyloides* and *isopora belli* infection this observation is in par with the studies done by Addis Ababa (3.4%), Jimma (8%), and Brazil (3.9%) (17, 18)

Cryptosporidiosis is the commonest infection which plays a major role in the epidemiology of opportunistic infections among the enteric protozoan parasites in HIV infected individuals. Among those ethological agents coccidian parasites like *Isospora belli* and *Cryptosporidium* are the causative agent of life threatening chronic watery diarrhoea, weight loss and malabsorption. Low socioeconomic status, poor hygiene, unavailability of safe drinking water and frequent contact with livestock may be responsible for the high percentage of cryptosporidiosis. Provision of safe drinking water and maintaining good hygiene is important in prevention.

4. Conclusion

Although our study was confined to a limited no of sample size, it confirms the findings that HIV seropositive individuals are prone to infections with enteric protozoan parasites belonging to both opportunistic and non opportunistic pathogens.

Hence it is necessary that HIV/AIDS patients presenting with diarrhoea should be screened for enteric protozoan parasites with most accurate diagnostic methods.

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